Claims:

1. A method for detecting pauses in speech in speech recognition, in which method, for recognizing speech commands uttered by the user, the voice is converted into an electrical signal, **characterized** in that in the method, the frequency spectrum of the electrical signal is divided into two or more sub-bands, samples of the signals in the sub-bands are stored at intervals, the energy levels of the sub-bands are determined on the basis of the stored samples, a power threshold value (thr) is determined, and the energy levels of the sub-bands are compared with said power threshold value (thr), wherein the comparison results are used for producing a pause detecting result.

2. The method according to claim 1, **characterized** in that a detection time limit (END) and a detection quantity (SB_SUFF_TH) are determined, wherein in the method, the calculation of the length of a pause in a sub-band is started when the energy level of the sub-band falls below said power threshold value (thr), wherein in the method, a sub-band specific detection is performed when the calculation reaches the detection time limit (END), it is examined on how many sub-bands the energy level was below the power threshold value (thr) longer than the time detection limit (END), wherein a pause detection decision is made if the number of sub-band specific detections is greater than or equal to the detection quantity (SB_SUFF_TH).

3. The method according to claim 2, **characterized** in that in the method, also an activity time limit (SB_ACTIVE_TH) and an activity quantity (SB_MIN_TH) are determined, wherein a pause detection decision is made if the quantity of sub-band specific detections is greater than or equal to the activity quantity (SB_MIN_TH) and the activity time limit (SB_ACTIVE_TH) has not been reached on the other sub-bands in the calculation of the length of the pause in the sub-band.

4. The method according to claim 1, 2 or 3, **characterized** in that the power threshold value (thr) is calculated by the formula

$thr = p\_min + k \cdot (p\_max - p\_min)$, in which

p_min = the smallest power maximum determined of the stored samples of the sub-bands, and

p_max = the greatest power minimum determined of the stored samples of the sub-bands.

5. The method according to any of the claims 1 to 4, **characterized** in that said power threshold value (thr) is calculated adaptively by taking into account the environmental noise level at each instant.

6. The method according to claim 5, **characterized** in that for calculating said power threshold value (thr), a modification coefficient (UPDATE_C) is determined, and on the basis of the stored samples, the greatest power level (win_max) and the smallest power level (win_min) of the sub-bands are calculated, wherein the power maximum (p_max) and power minimum (p_min) are determined by the formulae:

$$p\_max(i,t) = (1-UPDATE\_C)\cdot p\_max(i,t-1)+(UPDATE\_C\cdot win\_max)$$
$$p\_min(i,t) = (1-UPDATE\_C)\cdot p\_min(i,t-1)+(UPDATE\_C\cdot win\_min)$$

in which $0 < UPDATE\_C < 1$,
$0 < i < L$, and
L is the number of sub-bands.

7. The method according to claim 6, **characterized** in that further in the method,

— the modification coefficient (UPDATE_C) is increased, if the absolute value of the difference between said calculated highest power level (win_max) and the power maximum (p_max), or the absolute value of the difference between said calculated lowest power level (win_min) and the power minimum (p_min) has increased,

— the modification coefficient (UPDATE_C) is reduced, if the absolute value of the difference between said calculated highest power level (win_max) and the power maximum (p_max), or the absolute value of the difference between said calculated lowest power level (win_min) and the power minimum (p_min) has decreased.

8. A speech recognition device (16) comprising means (1a, 1b) for converting speech commands uttered by a user into an electrical signal, **characterized** in that it also comprises:

— means (8) for dividing the frequency spectrum of the electrical signal into two or more sub-bands,

— means (14) for storing samples of the signals of the sub-bands at intervals,

— means (5, 13) for determining energy levels of the sub-bands on the basis of the stored samples,

— means (5, 13) for determining a power threshold value (thr),

— means (5, 13) for comparing the energy levels of the sub-bands with said power threshold value (thr), and

— means (5, 13) for detecting a pause in the speech on the basis of said comparison results.

9. The speech recognition device (16) according to claim 8, **characterized** in that the power threshold value is calculated by the formula

$thr = p\_min + k \cdot (p\_max - p\_min)$, in which

p_min = the smallest determined power maximum of the stored samples of the sub-bands, and

p_max = the greatest determined power minimum of the stored samples of the sub-bands.

10. The speech recognition device (16) according to claim 8 or 9, **characterized** in that it comprises also means (10, 11) for filtering the signals of the sub-bands before storage.

11. A wireless communication device (MS) comprising means (16) for recognizing speech and means (1a, 1b) for converting speech commands uttered by a user into an electrical signal, **characterized** in that the means (16) for recognizing speech comprise also:

— means (8) for dividing the frequency spectrum of the electrical signal into two or more sub-bands,

— means (14) for storing samples of the signals of the sub-bands at intervals,

- means (5, 13) for determining energy levels of the sub-bands on the basis of the stored samples,
- means (5, 13) for determining a power threshold value (thr),
- means (5, 13) for comparing the energy levels of the sub-bands with said power threshold value (thr), and
- means (5, 13) for detecting a pause in the speech on the basis of said comparison results.